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Landbird Monitoring in the National Park Service's San Francisco Bay Area Network

A Summary Report of the 2005 Field Activities for:

Golden Gate National Recreation Area
John Muir National Historic Site
Pinnacles National Monument
and
Point Reyes National Seashore

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Table of Contents

Introduction

PRBO Conservation Science has been conducting landbird monitoring since 1965 in the Point Reyes National Seashore, when the organization was founded and work began (see Ballard et al. 2003, Howell and Gardali 2003). In addition, PRBO has been conducting annual, standardized point count surveys, nest searching, and constant effort mist-netting at other locations within the Point Reyes National Seashore (PORE) and the Golden Gate National Recreation Area (GOGA) for nearly a decade (Holmes et al. 1998, Scoggin et al. 2000, Gardali et al. 2003a, Gardali et al. 2003b, Michaud et al. 2004, Samuels et al. 2005). Over the last five years, however, PRBO conducted more comprehensive habitat-specific landbird inventories within PORE, GOGA, Pinnacles National Monument (PINN), and John Muir National Historic Site (JOMU) (Flannery et al. 2001, Hammond and Geupel 2003, Haff et al. 2003), primarily focusing on the breeding season.

In 2004, PRBO continued monitoring at many of these long-term sites, some of them year-round, and initiated a pilot monitoring program at others (e.g., PINN, JOMU; see Humple and Gardali 2004). These sites, with a few additions, continued to be monitored in 2005. Most of these sites are being instituted as long-term monitoring sites and will be surveyed annually. Additions or changes may be made once the landbird monitoring protocols are finalized. Fieldwork was conducted primarily during the breeding season, except in GOGA where some monitoring was also done in fall and PORE where monitoring occurs year-round at some sites. Some of this monitoring, especially at the Palomarin Field Station, is funded by sources other than the NPS, including members, private donors, and foundations, and while not officially part of the SFBAN monitoring program is included herein.

The goals of this report are to present:

- Summaries of all sites where monitoring occurred in 2005, including habitat type, methods, location, monitoring history, and dates monitored.

- Web-based access to all 2005 point count data now available online to SFBAN members (e.g., raw data, querying tools), with 2004 already available as of last year.

Site Selection and Details

See Table 1 for complete details of all sites surveyed in 2005.

Golden Gate National Recreation Area

We continued intensive monitoring at two riparian sites – Redwood Creek and Lagunitas Creek, our longest run sites in this park – where we employ multiple monitoring methods (see Table 1 for details). PRBO began monitoring at these sites in 1997 as part of a separate monitoring project within GOGA. Point count survey stations and nest monitoring were established here by the Kern River Research's Center's Brown-headed Cowbird Project (Halterman et al. 1999) in 1995. PRBO began point count surveys and nest monitoring at these creeks in 1997 and mist-netting was initiated in 2001. In 2005 we continued monitoring these sites although we discontinued nest monitoring at Redwood Creek. All of the west Marin mist-netting sites, including these two, serve as replicates for one another. In 2005, we also began monitoring three point count transects that were originally surveyed by PRBO in 1997-98 as part of our Golden Gate National Recreation Area songbird monitoring project. One transect is in riparian habitat (Gerbode Valley), and two are in coastal scrub (Coyote Ridge Trail and Rodeo Gulch); both habitats are the focal habitats within this park. The starting points for these transects were randomly selected (see Semenoff-Irving and Howell 2005 for selection method).

John Muir National Historic Site

The John Muir point count transect at Mt. Wanda, which traversed all habitat types present at JOMU, was originally surveyed in 2001 as part of an inventory of JOMU and Eugene O'Neill National Historic Sites (Hammond and Geupel 2003), and was repeated in both 2004 and 2005 as part of the SFBAN landbird monitoring program.

Pinnacles National Monument

In 2005, we continued monitoring the nine point count transects we had selected in 2004 when we initiated the long-term landbird monitoring program at Pinnacles. We focused on riparian and chaparral habitats as priority habitats, as they host the most birds and cover the greatest area, respectively. We also included a smaller sample of point counts located within the Park's pine/oak woodland habitat. PRBO and PINN collaborated in selecting long-term monitoring sites through examining historic point count stations; these included ones surveyed by PRBO in 2001-2002 during an avian inventory of the park (Haff et al. 2003), as well as ones surveyed in 1983-1985 and again in 1997-1999 by PINN biologists. Ultimately we chose survey stations that: 1) best represented the different habitat and sub-habitat types in the park (e.g., we wanted our chaparral points to encompass different types of chaparral habitat); 2) could be clumped with other individual point count stations in order to create a transect that could be surveyed in one morning (i.e., we discarded some of the historical points that lacked nearby points); 3) had reasonable access, even if by backpacking; and 4) could be surveyed with the resources available for landbird monitoring in this park (i.e., only a limited number could be selected). In both 2004 and 2005 the point count transects were surveyed by PRBO and PINN biologists.

Point Reyes National Seashore

We have been conducting long-term monitoring within PORE at the Palomarin Field Station since 1965 when PRBO was founded and mist-netting efforts began. Standardized constant

effort mist-netting has been done there since 1976; nest monitoring since 1979; point counting there and at the adjacent Arroyo Honda since 1992; mist-netting at a second location at the site since 1992; fall area search surveys since 2003 (year-round began in 2005); and Winter Bird Population Studies (WBPS) conducted since 1980 at 3 plots and since 1997 on Grid 5. It is a top priority of PRBO to continue monitoring at this site, as it is one of the longest continuously run landbird monitoring stations in North America, and is the longest run banding stations in the United States. While not officially part of the SFBAN monitoring program, the monitoring done at this site contributes greatly to the monitoring in the region, and also serves as a replicate for work done elsewhere.

PRBO began long-term monitoring at Muddy Hollow as part of a larger study examining the effects of the Mt. Vision Fire on landbirds (Gardali et al. 2003a, Samuels et al. 2005). The point counts stations we surveyed there and at Lower Olema Creek were also a continuation of a project initiated by the Kern River Research Center in 1995. The Estero transect was established in 2002 as part of the Wildland Urban Interface (WUI) project. We continued all of these efforts in 2005. The Upper Olema Creek transect was originally surveyed by PRBO in 1997-98 as part of the Point Reyes National Seashore landbird monitoring project.

Other Sites

We conduct year-round constant effort mist-netting, breeding season point counts, and fall area search surveys at Pine Gulch on the Bolinas Lagoon, located on Marin Open Space land. This site has been surveyed since 1994 and is included herein as a replicate site for work conducted in the SFBAN.

Table 1. Summary of all sites surveyed in the San Francisco Bay Area Network**,** National Parks Service Monitoring Program, PRBO 2005.

Park	Transect	Code	Old Code	Season[a]	Primary Habitat	Current Methods Used[b] (and # of sites)					# of Previous Years of Surveys				
						PC	NS	MN	WS	AS	PC	NS	MN	WS	AS
GOGA	Coyote Ridge Trail	CRTR		S	Grassland/Scrub	15	-	-	-	-	2[c]				
	Gerbode Valley	GERB		S	Riparian	18	-	-	-	-	2[c]				
	Lagunitas Creek	LACR	LC	F, S	Riparian	18	-	10	-	3	8	4[c]	4	-	4
	Redwood Creek	RECR	RC, REDC	F, S	Riparian	24	-	11	-	3	8	8[c]	4	-	4
	Rodeo Gulch	RODE		S	Grassland/Scrub	15	-	-	-	-	2[c]				
JOMU	John Muir	JOMU	MTWA	S	Mixed habitats	14	-	-	-	-	2	-	-	-	-
							-	-	-	-		-	-	-	-
PINN	Balconies	BALC		S	Chaparral	10	-	-	-	-	≥3[d]	-	-	-	-
	Headquarters	HEAD		S	Chaparral, Riparian, Pine/oak	7	-	-	-	-	≥3[d]	-	-	-	-
	High Peaks Trail	HIGH		S	Chaparral, Pine/oak woodland	10	-	-	-	-	≥3[d]	-	-	-	-
	McCabe Canyon	MCCA		S	Pine/oak woodland	10	-	-	-	-	2[e]	-	-	-	-
	North Chalone Peak	NCPE		S	Chaparral	8	-	-	-	-	2[e]	-	-	-	-
	North Fork Chalone Creek	NFCC[f]	WFCC	S	Riparian	12	-	-	-	-	2[e]	-	-	-	-
	North Wilderness Trail	NWTR		S	Chaparral	14	-	-	-	-	2[g]	-	-	-	-
	South Chalone Peak	SCPE		S	Chaparral	10	-	-	-	-	2[e]	-	-	-	-
	South Wilderness Trail	SWTR		S	Riparian	11	-	-	-	-	2[g]	-	-	-	-
PORE	Arroyo Honda	ARHO	AH	S	Mixed evergreen/Riparian	6	-	-	-	-	12	-	-	-	-
	Estero	ESTE		S	Coastal scrub	9	-	-	-	-	2[h]	-	-	-	-
	Lower Olema Creek	LOOL	LO, LOCR	S	Riparian	11	-	-	-	-	4[i]	-	-	-	-
	Muddy Hollow	MUHO	MH	F, W, S	Riparian	15[j]	-	10	-	6	8	2[j]	10	-	10
	Palomarin	PALO	PN	F, W, S	Coastal scrub/Mixed evergreen	13	3	20	3	1	13	26	40	15	2
	Palomarin Grid 5	PAG5	G5	S, W	Coastal scrub	7	1	-	2[k]	-	8	11	-	8	-
	Palomarin Uppers	PGUP	PG	F, W, S	Coastal scrub	n/a	n/a	10	-	-	-	-	13	-	-
	Upper Olema Creek	UPOL	UO	S	Riparian	13	-	-	-	-	2[l]	-	-	-	-
Other	Pine Gulch	PIGU	PI	F, W, S	Riparian	5	-	10	-	3	8	-	11	-	11

[a] F=fall, W=winter, S=spring/summer (breeding); [b] PC=point counts, NS=nest searching, MN=mist-netting, WS=winter bird population studies; AS=area search; [c] nest searching at LACR conducted 1997-1999 and at RECR conducted 1997-2004; point counting at CRTR, GERB, and RODE occurred in 1997-1998 [d] surveyed by NPS in 1983-1985 and again in 1997-1999, uncertain of number of years each site was monitored during those two periods; points were named differently; PRBO began monitoring these sites in 2004; [e] surveyed by PRBO in 2001 as part of inventory, began annual monitoring in 2004; [f] misnamed West Fork Chalone Creek (WFCC) during inventory, including in final inventory report (Haff et al. 2003); [g] surveyed by PRBO in 2002, began annual monitoring in 2004; [h] surveyed in 2002, began annual monitoring began in 2004; [i] surveyed in 1997, 1998, and 2003 onwards, with the 4 points at Five Brooks dropped after '98; [j] at MUHO formerly were 17 points but 2 dropped because of access difficulties following vegetation succession; and nest searching conducted 1996-1997; [k] the formerly 40 ha WBPS plot for Grid 5 was reduced in 2004 to two plots 8 ha apiece; [k] UPOL was visited in 1997-1998.

Point Count Surveys

Repeatable point count surveys were conducted following standardized point count protocol as described in Ralph et al. (1993 and 1995). Transects consist of multiple point count survey stations, spaced at least 200 m apart from one another (at least 250m in PINN). At each station surveyed in 2005, a five-minute, variable circular plot (VCP) survey was conducted, with separate categories for different distance band widths. This varied slightly between parks in order to retain consistency to previous years; at PINN band widths were 0-10m, 10-20m, 20-30m, 30-40m, 40-50m, 50-75m, 75-100m, and >100m. At PORE, GOGA, and JOMU band widths were 0-10m, 10-20m, 20-30m, 30-50m, 50-100m, and >100m. All birds detected within a five-minute period at each station were recorded and placed within the distance band width where they were initially detected, as well as those flying over the census area but not landing. Individuals known to be hatching-year (juvenile) birds were coded uniquely so they could be removed from analysis if desired. The type of initial detection (song, visual or call) was noted for each individual. Counts began around local sunrise (or 15 minutes after) and continued for no more than four hours in order to restrict the census to peak singing hours. Counts were not conducted during poor weather conditions, when bird activity levels and detection probabilities were reduced. Complete protocols for the point count method can be found on the PRBO website at http://www.prbo.org/tools/pc/pc.htm.

All point count stations were visited two times in 2005 with a minimum of 10 days between visits, to increase detection probabilities (Appendix A). These visits were between early May and late June for GOGA, JOMU and PORE, and between late April and mid-May for PINN as activity levels there reduce earlier in the season then at the more temperate, moister sites.

Online Point Count Data

We uploaded all SFBAN point count data for 2005 to a PRBO-managed website, available through PRBO's website or that of California Partners in Flight (CalPIF). This data is available to all SFBAN members to browse, download, or query. Previously available on that website were the 2004 SFBAN point count data. See Appendix B for a representation of what these webpages look like, including an indication of how the data can be queried by interested participants of SFBAN.

These electronic point count data can be viewed and queried online by following these steps:

- Go to: http://cain.nbii.gov/prbo/onpc/
- Insert the UserID *SFBAN* (note that this is CAPS sensitive)
- Insert the password *prbobirds* (note that this is CAPS sensitive).

The following options exist for querying/downloading the data:

1. Select *Browse/edit point count data* off the index in order to examine all the data for each visit at each point count station
2. Select *Download complete data sets* to have all the 2004 SFBAN point count data
3. Select *Query point count data* to query the data set in numerous ways:

- Select the stations you want to include in the query
- View species lists for any site
- Select the distance band and data type you want to query (e.g., all data; visual flyovers; all data <50m); you can choose multiple types simultaneously
- Choose the month and/or year ranges you want to include
- Select your level of query (by station or by site)
- Select any species you'd like to be excluded in the query
- Submit your query and view results
- Download results if desired.

Constant Effort Mist-netting

Constant-effort mist netting provides data on the productivity of locally breeding species, adult annual survival (if conducted for multiple years), site fidelity, age classes of migrant and winter species, habitat use, and stopover ecology. Mist netting was conducted year-round in PORE at PRBO's Palomarin Field Station (two sites) and at Muddy Hollow, year-round at Pine Gulch Marin County Open Space land, and in spring through fall in GOGA at Redwood and Lagunitas creeks (see Table 1 for details). An array of nets was opened 15 minutes after local sunrise and operated for 6 hours. At the main Palomarin site, nets were run 6 days per week May through November and 3 days per week December through April. At all other sites, nets were run approximately once every 10 days May through mid-August, once every 7 days mid-August through October, and, if winter mist-netting was done, once every 10 days November through April. There were 20 nets at Palomarin, 11 at Redwood Creek, and 10 at each of the other sites.

Each bird captured (except hummingbirds at sites other than Palomarin) was banded using a United States Geological Survey / Biological Resources Division (USGS/BRD) federal band enabling permanent identification. Study species at Palomarin were also fitted with color bands to make individual identification possible in the field. Prior to the release of either newly banded or recaptured individuals, biologists recorded species, age, sex, skull ossification, breeding condition, fat score, molt, flight feather wear and fade, wing length, weight, time captured and net captured in, as described by Pyle (1997). All mist netting data is submitted to the MAPS program of the Institute for Bird Populations (DeSante et al. 1998, http://www.birdpop.org/) and to the USGS Bird Banding Lab (BBL, Patuxent, MD, http://www.pwrc.usgs.gov/bbl/default.htm).

Nest Searching

Nest monitoring measures nesting success in specific habitats and provides information on population health. Measurements of vegetation associated with nests may identify habitat features that influence breeding productivity as well as species-specific requirements. Examination of nests also allows collection of life history data (e.g., clutch size, number of broods, number of nesting attempts) that provide important insight into "vulnerability of species to decimation or perturbations" (Martin and Geupel 1993).

Biologists monitored nests on four plots (one that is called Grid 5 in Table 1) at Palomarin (PORE) in coastal scrub habitat. Nest finding and monitoring followed the specific guidelines outlined in Martin and Geupel (1993). Nests were located at all stages (construction, egg-laying, incubation, and nestling). Checking nests (generally every 1-4 days) was done with careful attention given to minimizing human disturbance. These precautionary measures included keeping visits brief, minimizing disturbance to the area around a nest and staying clear of nest sites when predators were detected nearby. In additions, photographs of nestlings of select species were taken to contribute to a nestling guide being produced by PRBO and USFWS.

Area Search Surveys

During the fall we conducted area search censuses at all four of our riparian mist-netting plots, and year-round we conducted area search censuses at the Palomarin Field Station. Plots were generally located near the nets in order to document all species using the area, including ones not typically captured in mist-nets or not captured proportionately to their densities. Three plots were surveyed at each of the riparian stations (six at Muddy Hollow), and one plot at Palomarin. Each plot was surveyed, if possible, each time mist-netting was conducted (approximately once per week in riparian sites and 3-6 times per week at Palomarin). This was done during the first four hours after sunrise. On some mornings when capture rates in the nets were high, biologists were unable to conduct area searches; occasionally they were done the following day when staff resources allowed for it. During an area search survey the observer covered the entire plot in 20 minutes (30 for Palomarin), recording all birds by species detected using the habitat within the plot (see Ralph et al. 1993 for more details of this method).

Winter Bird Population Studies

We conduct weekly Winter Bird Population Studies on each of our Palomarin nest plots in January and February. Protocols followed standardized techniques provided from the Cornell Laboratory of Ornithology's Resident Bird Counts project (Lowe 1994). Each observer visited his or her plot weekly over approximately a two-month period, and spent the morning thoroughly and systematically covering their plot, mapping all individuals detected by species. Counts were not conducted during inclement weather. This was the 15th year of study for 3 of our plots and the 8th year for a 4th and 5th plot (the latter two being originally part of a single larger plot on Grid 5 that, due to habitat changes and resulting bird community changes, became too large to survey as one plot and was modified in 2004).

Geo-referencing

We have UTM coordinates for each point count census station. Because we did not initiate any entirely new point count transects, all of these transects had been geo-referenced in the past, but some had to be updated because the coordinates had been collected before the accuracy of civilian GPS units had been improved. In addition, the UTMs for the location of all nests monitored in 2005 were also recorded, and are kept in master files at PRBO.

Personnel

Point count data in GOGA and PORE were collected primarily by PRBO biologists Dennis Jongsomjit, Tom Gardali and Diana Humple, with additional help by Kim Kreitinger and Viola Toniolo. Jim Petterson (PINN), Gavin Emmons (PINN), and Diana Humple conducted all surveys within Pinnacles National Monument. The John Muir National Monument point count data was collected by Cheryl Abel (JOMU). Nest monitoring at Palomarin was done by Scott Jennings, Kerry Neijstrom, Corrina "Coco" Snow, and Matt Graham, with participation and under the guidance of Dennis Jongsomjit. Mist-netting and area search surveys within the two parks were done under the guidance of Diana Humple. The winter interns responsible for this as well as winter bird population studies were Angie Chessey, Kristy Dybala, Alison Peterson, and Branden Wilson; spring and summer interns were Lauren Johnson, Leslie Nicholson, Melissa Grunst, and Andrea Grunst; and fall interns were Lauren Johnson, Leslie Nicholson, Nohemi Villalpando, and Vicky Galan. Dennis Jongsomjit summarized point count visit dates for 2005. Computer programs used to manage and summarize data, as well as the online point count data query tools, were created primarily by PRBO biologist Grant Ballard. Viola Toniolo provided primary GIS support in 2005. These projects were carried out under the guidance of Tom Gardali and PRBO's Terrestrial Program Director Geoffrey Geupel.

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Appendix A. Dates of point count visits across all years, San Francisco Bay Area National Parks Monitoring.

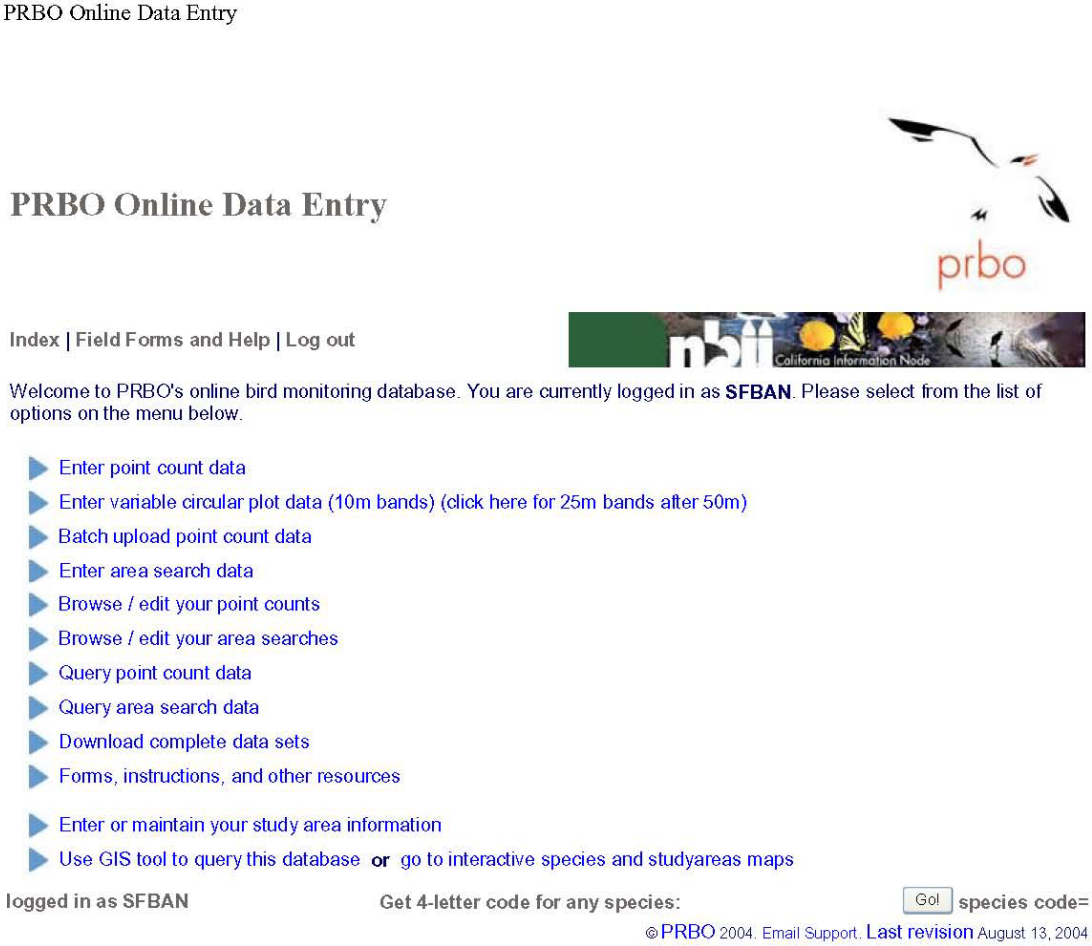
Park	Station	Visit #1	Visit #2	Visit #3
GOGA	Coyote Ridge Trail	05/21/2005	06/21/2005	n/a
		5/13/1998	6/2/1998	6/24/1998
	Gerbode Valley	6/3/2005	6/30/2005	n/a
		5/5/1998	5/31/1998	6/18/1998
		4/24/1997	5/13 & 5/21/1997	6/20/1997
	Lagunitas Creek	5/19/2005	6/12/2005	n/a
		5/4/2004	5/31/2004	7/7/2004
		5/16/2003	6/4/2003	6/19/2003
		5/8/2002	5/23/2002	6/11/2002
		5/23/2001	6/15/2001	6/30/2001
		5/13/2000	5/25/2000	6/12/2000
		5/10/1999	5/27/1999	6/16/1999
		4/28/1998	5/20/1998	6/18/1998
		4/25/1997	5/21/1997	6/18/1997
	Redwood Creek (Upper)	5/27/2005	6/16/2005	n/a
		4/27/2004	5/19/2004	7/2/2004
		5/20/2003	5/30/2003	6/17/2003
		5/10/2002	5/24/2002	6/10/2002
		5/22/2001	6/12/2001	6/27/2001
		5/20/2000	6/2/2000	6/14/2000
		5/7/1999	5/26/1999	6/12/1999
		4/29/1998	5/23/1998	6/10/1998
		4/23/1997	5/26/1997	6/17/1997
	Redwood Creek (Lower)	5/31/2005	6/22/2005	n/a
		5/1/2004	5/18/2004	6/25/2004
		5/15/2003	5/30/2003	6/17/2003
		5/9/2002	5/30/2002	6/13/2002
		5/21/2001	6/11/2001	6/26/2001
		5/23/2000	6/5/2000	6/17/2000
		5/7/1999	5/26/1999	6/12/1999
		4/29/1998	5/23/1998	6/10/1998
		4/23/1997	5/26/1997	6/17/1997
	Rodeo Gulch	5/25/2005	6/29/2005	n/a
		5/6/1998	5/20/1998	6/18/1998
		5/14/1997	6/6/1997	6/27/1997
JOMU	John Muir	5/4/2005	5/25/2005	n/a
		5/14/2004	6/4/2004	6/16/2004
		5/14/2004	5/28/2004	6/11/2004
PINN	Balconies [a]	4/30/2005	5/11/2005	n/a
		5/8/2004	5/19/2004	6/5/2004
	Headquarters [a]	4/27/2005	5/14/2005	n/a
		5/7/2004	5/18/2004	6/6/2004
	High Peak [a]	4/29/2005	5/15/2005	n/a
		5/9/2004	5/20/2004	6/7/2004

Park	Station	Visit #1	Visit #2	Visit #3
	McCabe Canyon	4/29/2005	5/13/2005	n/a
		5/10/2004	5/22/2004	6/1/2004
		5/7/2001	5/30/2001	6/21/2001
	North Chalone Peak	5/3/2005	5/13/2005	n/a
		5/11/2004	5/21/2004	6/3/2004
		5/7/2001	5/30/2001	6/17/2001
	North Fork Chalone Creek	5/1/2005	5/12/2005	n/a
		5/4/2004	5/14/2004	5/30/2004
		5/8/2001	5/31/2001	6/20/2001
	North Wilderness Trail	4/27/2005	5/11/2005	n/a
		5/4 and 5/6/2004	5/17/2004	6/4/2004
		6/9/2002	6/30/2002	n/a
	South Chalone Peak	4/25/2005	5/13/2005	n/a
		5/5/2004	5/16/2004	6/5/2004
		5/8/2001	5/30/2001	6/17/2001
	South Wilderness Trail	5/2/2005	5/15/2005	n/a
		5/5/2004	5/17/2004	6/6/2004
		6/8/2002	6/23/2002	n/a
PORE	Arroyo Honda	5/26/2005	6/21/2005	n/a
		5/2/2004	5/27/2004	6/25/2004
		4/30/2003	5/31/2003	6/15/2003
		5/8/2002	5/31/2002	6/14/2002
		5/21/2001	6/11/2001	n/a
		5/9/2000	5/23/2000	7/9/2000
		4/28/1999	6/7/1999	6/30/1999
		5/13/1998	6/9/1998	7/2/1998
		5/6/1997	5/31/1997	6/26/1997
		5/4/1996	5/31/1996	6/11/1996
		5/19/1995 [b]	6/21/1995 [b]	6/30/1995 [b]
		5/26/1994 [b]	6/2/1994 [b]	6/26/1994 [b]
		5/23/1993 [b]	6/18/1993 [b]	7/14/1993 [b]
	Estero	5/11/2005	5/29/2005	n/a
		5/5/2004	5/29/2004	6/26/2004
		5/12/2002	5/30/2002	n/a
	Upper Olema Creek	5/20/2005	6/16/2005	n/a
		4/28/1998	6/1/1998	6/24/2998
		4/29/1997	5/28/1997	6/24/1997
	Lower Olema Creek	5/29/2005	6/23/2005	n/a
		5/7/2004	6/1/2004	n/a
		5/21/2003	6/14/2003	n/a
		4/28/1998	6/5/1998	6/26/1998
		5/3/1997	6/1/1997	6/27/1997
	Muddy Hollow	5/24/2005	6/24/2005	n/a
		5/9/2004	6/1/2004	6/28/2004

Park	Station	Visit #1	Visit #2	Visit #3
		5/13/2003	5/31/2003	6/23/2003
		5/11/2002	5/29/2002	6/9/2002
		5/27/2001	6/14/2001	6/28/2001
		5/16/2000	6/6/2000	6/19/2000
		5/17/1999	6/7/1999	6/22/1999
		4/27/1998	5/30/1998	6/25/1998
		4/28/1997	5/27/1997	6/23/1997
	Palomarin	5/28/2005	6/21/2005	n/a
		5/14/2004	6/15/2004	6/23/2004
		4/30/2003	5/28/2003	6/18/2003
		5/12/2002	5/28/2002	6/15/2002
		5/21/2001	6/18/2001	n/a
		5/11/2000	5/25/2000	6/13/2000
		5/11/1999	6/8/1999	6/30/1999
		5/13/1998	6/9/1998	7/1/1998
		5/5/1997	5/30/1997	6/26/1997
		4/29 and 4/30 1996	5/16/1996	5/30/1996
		5/11/1995 [b]	5/25/1995 [b]	6/29/1995 [b]
		4/22/1994 [b]	6/12/1994 [b]	6/23/1994 [b]
		5/10/1993 [b]	6/26/1993 [b]	6/26/2003 [b]
	Palomarin Grid 5	5/21/2005	6/24/2005	n/a
		5/15/2004	6/6/2004	6/18/2004
		4/29/2003	5/28/2003	6/19/2003
		5/12/2002	5/28/2002	n/a
		5/23/2001	6/11/2001	n/a
		5/9/2000	5/22/2000	7/9/2000
		5/20/1999	6/12/1999	7/3/1999
		5/16/1998	6/12/1998	7/3/1998
		5/6/1997	5/31/1997	6/26/1997
		5/4/1996	5/31/1996	6/11/1996
Other	Pine Gulch	5/19/2005	6/14/2005	n/a
		5/20/2004	6/8/2004	6/30/2004
		5/4/2003	6/2/2003	6/16/2003
		5/12/2002	5/30/2002	6/13/2002
		5/20/2001	6/28/2001	n/a
		5/18/2000	6/29/2000	7/9/2000
		5/11/1999	6/19/1999	6/30/1999
		5/13/1998	6/5/1998	6/23/1998
		5/31/1997	6/12/1997	6/26/1997

[a] Not presented are dates when surveyed in the 1980's and 1990's. [b] Points were surveyed year-round in these years, including more than 3 times per breeding season; chose the most appropriate dates during the breeding season to include herein.

Appendix B. Examples of online point count data query tools.



Appendix B. Examples of online point count data query tools.

Point Count Database Queries

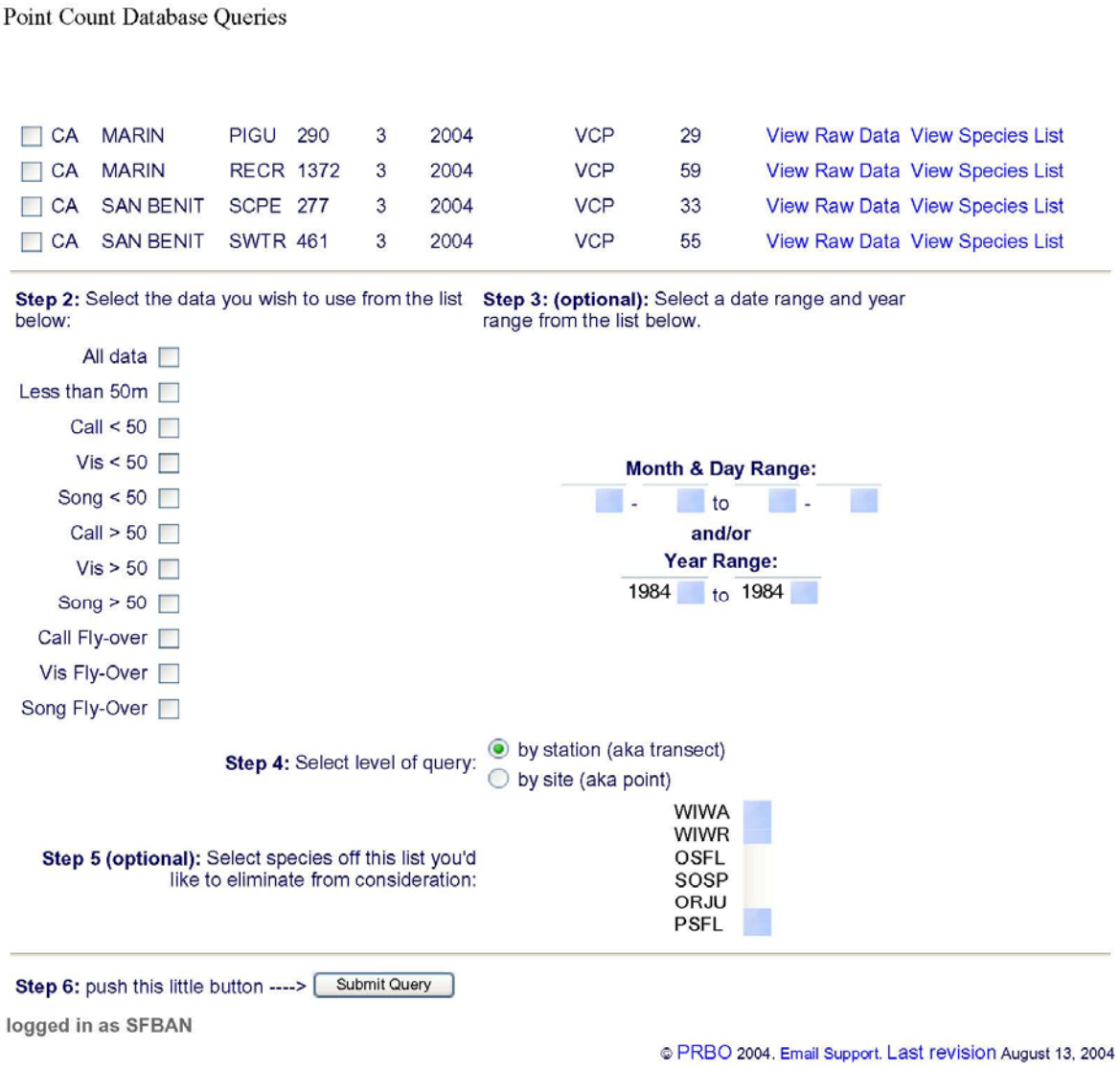
Index | Field Forms and Help | Log out

There are a total of 9326 records in your dataset.

Step 1: Select the stations you'd like to include in your query, using the checkboxes on the left, or just choose a "quick query" from the choices on the right.

State	Region	Station	Records	Visits	Years censused	Datatype(s)	Richness	Quick Queries
CA	MARIN	ARHO	223	3	2004	VCP	32	View Raw Data View Species List
CA	SAN BENIT	BALC	416	3	2004	VCP	41	View Raw Data View Species List
CA	MARIN	ESTE	458	3	2004	VCP	43	View Raw Data View Species List
CA	SAN BENIT	HEAD	328	3	2004	VCP	48	View Raw Data View Species List
CA	SAN BENIT	HIGH	358	3	2004	VCP	45	View Raw Data View Species List
CA	CONTRA CO	JOMU	727	3	2004	VCP	46	View Raw Data View Species List
CA	MARIN	LACR	717	3	2004	VCP	59	View Raw Data View Species List
CA	MARIN	LOOL	408	2	2004	VCP	48	View Raw Data View Species List
CA	SAN BENIT	MCCA	478	3	2004	VCP	44	View Raw Data View Species List
CA	MARIN	MUHO	755	3	2004	VCP	49	View Raw Data View Species List
CA	SAN BENIT	NCPE	277	3	2004	VCP	35	View Raw Data View Species List
CA	SAN BENIT	NFCC	466	3	2004	VCP	47	View Raw Data View Species List
CA	SAN BENIT	NWTR	524	3	2004	VCP	41	View Raw Data View Species List
CA	MARIN	PAG5	303	3	2004	VCP	42	View Raw Data View Species List
CA	MARIN	PALO	488	3	2004	VCP	40	View Raw Data View Species List

Appendix B. Examples of online point count data query tools.



Point Count Database Queries Page 2 of 2

☐	CA	MARIN	PIGU	290	3	2004	VCP	29	View Raw Data View Species List
☐	CA	MARIN	RECR	1372	3	2004	VCP	59	View Raw Data View Species List
☐	CA	SAN BENIT	SCPE	277	3	2004	VCP	33	View Raw Data View Species List
☐	CA	SAN BENIT	SWTR	461	3	2004	VCP	55	View Raw Data View Species List

Step 2: Select the data you wish to use from the list below:

All data ☐
Less than 50m ☐
Call < 50 ☐
Vis < 50 ☐
Song < 50 ☐
Call > 50 ☐
Vis > 50 ☐
Song > 50 ☐
Call Fly-over ☐
Vis Fly-Over ☐
Song Fly-Over ☐

Step 3: (optional): Select a date range and year range from the list below.

Month & Day Range:
- to -
and/or
Year Range:
1984 to 1984

Step 4: Select level of query: ◉ by station (aka transect) ○ by site (aka point)

Step 5 (optional): Select species off this list you'd like to eliminate from consideration:

WIWA
WIWR
OSFL
SOSP
ORJU
PSFL

Step 6: push this little button ----> Submit Query

logged in as SFBAN

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http://cain.nbii.gov/prbo/onpc/index.php?PHPSESSID=85fc008e0e812051bea5790afa73d994&module=pcquery 11/23/2004